

## NOTES ON THE FLOWERING PLANTS OF THE BILLIGIRIRANGAN HILLS.

BY

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The Billigirirangan Hills are situated at the S.E. corner of the Mysore Plateau. They may be described approximately as consisting of two ridges rising to nearly 6,000 ft., running north and south, and surrounded by lower hills. The western ridge slopes down on the west to an undulating plateau a few miles wide and about 4,000 ft. in elevation, locally known as the Malaikadu; this, after again rising in places, falls to the Mysore Plateau (Chamrajanagar District). The eastern ridge is longer, rather higher and more complex than the western, a number of spurs running out to the east. It falls on the east to an extension of the Mysore Plateau in the Kollegal Taluk of the Coimbatore District. There is a gap in this ridge at Bellaji. Politically these hills are about half in Mysore State and half in Coimbatore District, the border running on the north along the western ridge and on the south along the eastern ridge, and crossing the valley near Moskal.

On both ridges above about 5,000 ft. there are considerable areas of shola and short grass. The valley between the two ridges is largely filled by dense evergreen forest, part of which has been planted with coffee. The Malaikadu and most of the rest of the area at and below about 4,000 ft. is covered with deciduous forest with areas of coarse grass and some evergreen forest along the streams. The lower parts of the eastern and northern slopes are very dry. Apart from the five not very large coffee estates, these hills are almost uninhabited. A few Sholagars make clearings in the forest and raise crops, and timber is extracted from the more accessible areas, but much of the country remains virgin. The sparsity of population is due to the fact that except for the areas above about 4,500 ft. the whole region is malarious and infested with elephants.

The Billigirirangan Hills are a little over a hundred miles from the west coast, but between them and the sea, that is between the Nilgiris and Coorg, the Western Ghats are not high. Consequently these hills receive a considerable amount of rain and much mist during the S.-W. monsoon period. They are about 140 miles from the east coast and they receive also the N.-E. monsoon rains. In addition there are frequent thunder-storms during April and May. The first three months of the year are dry, but on the higher parts of the hills a rainfall of 60 to 80 inches is distributed through the rest of the year.

References to these hills in botanical literature are extremely few. Parts of these hills are included in the area covered by the collections of Mr. C. E. C. Fischer, which were described by Fr. E. Blatter in his Contribution to the Flora of North Coimbatore (*J. Bomb. Nat. Hist. Soc.*, Vol. xviii, No. 2, 1908). This contribution, however, although giving elevations at which plants occur, does not give exact

localities and covers a much wider and more diversified area than the Billigirirangan Hills alone.

The collections on which the following notes are based were made during the hot weather of 1938 and 1939 and during short visits in September and December. No attempt was made to form a complete collection of the plants of these hills, but special attention was paid to a limited number of groups of plants such as the Monocotyledons other than grasses and sedges, and the Geraniaceae, Gentianaceae, Scrophulariaceae and Acanthaceae. Most herbaceous plants found in flower were collected, but trees and ferns could not be dealt with.

The following abbreviations have been used in the list:—Mal. = Malaikadu, the area of deciduous forest at about 4,000 ft. on the west of the hills. Pun. Gt. = Punjur Ghat. This ghat runs from Punjur (c. 3,000 ft.) at the foot of the hills on the north to Bedaguli (c. 4,500 ft.) at the north end of the valley between the two ridges. Dod. = Doddasampagi Reserved Forest, but only the portion between Honnametti and the Big Tree was visited (3,000-3,500 ft.). E. sl. = eastern slopes of the eastern ridge (5,000-3,000 ft.). Dup. = near Dupabari on the eastern ridge (about 5,200 ft.). At. = Attikan on the western ridge (about 5,500 ft.). (K) refers to the fact that specimens of the plant were sent to Kew where they were identified, or their identification by the writer confirmed, by Mr. C. E. C. Fischer or (in the case of the orchids) Mr. Summerhayes.

The following statements appear to be justified by this partial survey of the flora of these hills. The area is remarkably rich in orchids. Sixty-six species of orchids were collected in flower, or have subsequently flowered on being transplanted to the writer's garden at Tambaram (Chingleput District, South India), and a number of others were found, but their identification is uncertain as they have not been seen in flower. Further, two or three which seem to be new species have been sent to Kew for identification and description, but owing to war conditions work on them has had to be postponed. This means that more than one-third of the known S. Indian orchids occur in this small area. Other epiphytic plants such as *Aeschynanthus Perrottetii*, *Hoya pauciflora*, *Procris Wightiana*, *Peperomias* and numerous ferns and club mosses also occur profusely. Ferns in general appear to be very abundant. Parasites of the *Loranthus* and *Viscum* genera are very noticeable. On the other hand marsh plants appear to be rather scanty. Species of *Xyris*, *Imbatiens rufescens*, *I. chinensis*, *Drosera rotundifolia*, *D. indica*, species of *Torenia* and most of the common Utricularias were not found in spite of careful search. In view of the limited elevation of these hills it is not surprising that such plants as *Rhododendron nilagiricum*, *Rosa Leschenaultiana*, *Anemone rivularis* and *Geranium nebalense* should not occur, but it is remarkable that such common plants as *Rhodomyrtus tomentosa*, *Cotoneaster bixifolia*, *Berberis tinctoria* and all shrubby species of *Osbeckia* should be absent. This is the more remarkable in view of the fact that these plants are common at lower elevations and in drier situations on the neighbouring Nilgiri Hills, and of the fact that many alpine plants such as *Gentiana pedicillata*, *Drosera peltata*, *Pedicularis zeylanica*, *Ceropogon pusilla*, *Parnassia mysorensis* and *Viola serpens* are common on the Billigirirangans.

The serial numbers given after some species (e.g. *Thalictrum saniculaeforme* DC. . . 1979) refer to mounted specimens in the writer's herbarium.

*Ranunculaceae.*

*Clematis*

1. *C. gouriana*, Roxb. Bel. fl. Dec.
2. *C. Wightiana*, Wall. Margins of sholas, At., Honnametti, fl. Dec.

*Thalictrum*

1. *T. saniculaeforme*, DC. (K) On shaded wet rocks, At., fl. Sept. 1979.
2. *T. Dalzellii*, Hook. (K) On wet rocks, At., Miskatikal, fl. Sept. 1983.

*Ranunculus Wallichianus*, W. & A. In sholas on both ridges, fl. May. Apparently the only buttercup on these hills.

*Dilleniaceae*

*Dillenia retusa*, Thunb. At.

*Magnoliaceae*

*Michelia Champaca*, Linn. Doddasampagi in moist deciduous forest.

A gigantic tree of this species, doubtless hundreds of years old, is venerated by the Hindus and is a place of pilgrimage from the Rangaswami temple on Bellikal Betta at the north end of these hills.

*Menispermaceae*

- Stephania japonica*, Miers. Common, evergreen forest, 4,000-5,000 ft., fl. Dec.
- Cissampelos Pareira*, Linn. E. sl. fl. June.

*Cruciferae*

*Cardamine*

1. *C. africana*, Linn. At.
2. *C. hirsuta*, Linn.

*Violaceae*

*Viola serpens*, Wall. Common, sholas 5,000 ft. and above, fl. and caps. May. The only violet collected on these hills.

*Bixaceae*

*Cochlospermum gossypium*, DC. Below Bel., fl. Dec., near Punjur, caps. April.

*Polygalaceae*

*Polygala*

1. *P. arillata*, Ham. Common, evergreen forest above 4,500 ft., Moskal, fl. and fruit Sept.
2. *P. rosmarinifolia*, W. & A. Common, grassland 4,500 ft., and above, fl. May, Sept. Plants may be 20 in. high.
3. *P. chinensis*, Linn. Pun. Gt., 3,500 ft. fl. May.
4. *P. persicariaefolia*, DC. Devakeri, Mal., amongst tall grass, fl. Sept. Near Pun., fl. April.

*Portulacaceae*

*Portulaca oleracea*, Linn. Dup. 5,000 ft., fl. May.

## Hypericaceae

## Hypericum

1. *H. mysorens*, Heyne. 4,500 ft. and upwards, fl. May.
2. *H. japonicum*, Thurb. In marshes, 4,500 ft. and above, Moskal, fl. May.

## Malvaceae

*Sida rhombifolia*, Linn. Mal., Dod., caps. Dec.

*Urena lobata*, Linn. Mal. fl. Dec.

*Kydia calycina*, Roxb. Common, Dod.

*Decaschistia crotonifolia*, W. & A. Pun. Gt. 3,500-4,000 ft., fl. June, Dec., caps. Dec.

## Hibiscus

1. *H. Abelmoschus*, Linn. E.sl. 3,000 ft., fl. June, Sept.

2. *H. angularis*, Mast. Miskatikal, fl. Dec.

3. *H. Solandra*, L'Herit. N.sl., deciduous forest 3,000-4,000 ft., fl. and caps. Sept.

4. *H. Lampas*, Cav. Mal, caps. June.

*Bombax malabaricum*, DC. Common, Dod., fl. April.

## Sterculiaceae

*Helicteres Isora*, Linn. Below Bedaguli, fl. Sept.

*Eriolaena Hookeriana*, W. & A. (K) Open deciduous forest, Mal. fl. June, caps. Dec. 1978.

*Buettneria herbacea*, Roxb. Pun. Gt. 3,500 ft., fl. May.

## Tiliaceae

*Grewia tiliaefolia*, Vahl. Common, Pun. Gt., Dod., Mal., fl. June.

## Linaceae

*Linum mysorens*, Heyne. Common, grassland, fl. Sept.

## Geraniaceae

*Oxalis corniculata*, Linn. Throughout the area.

*O. pubescens*, H. B. & K. and *O. latifolia*, H. H. & K. have run wild, and are especially prolific on and near the two higher estates, Attikan and Honnametti.

## Biophytum

1. *B. Candolleianum*, Wt. Frequent above 4,000 ft., Dod., fl. May, June, Sept.

2. *B. Reinwardtii*, Edgw. & Hook. f. E.sl., fl. Sept. 2193.

## Impatiens

1. *I. scapiflora*, Heyne; Common on wet rocks and branches of trees exposed to the S.W. monsoon at 5,000 ft. and above, fl. Sept. Some flowers seen in May.

2. *I. cuspidata*, Wt. Frequent in sholas, 5,000 ft. and above, Honnametti, Dup., fl. and caps. June, Sept. Fl. slightly fragrant.

3. *I. Balsamina*, Linn. Common 4,000-5,000 ft. Mal., At., Bel., fl. Sept.

4. *I. fruticosa*, DC. Slopes of Kataribetta at 5,000 ft., Nagamanpadabetta at 5,500 ft., fl. Sept.

5. *I. Goughii*, Wt. Along streams on the eastern ridge, 5,000 ft. and above, fl. Sept.



*Rutaceae*

**Murraya exotica**, Linn. Common in sholas, E. ridge 5,000 ft., fl. May. Petals up to 1.25 ins. long. (F.M.P. gives .5 in.)

*Atalantia*

*Meliaceae*

**Munronia Wallfchii**, Wt. Common in moist deciduous and evergreen forest 4,000 ft., fl. and fruit May.

**Cipadessa daccifera**, Miq. E.sl. 4,500 ft., fl. May.

*Icacingaceae*

*Mappia*

1. **M. oblonga**, Miers. Near Bel., fl. June. Flower foetid.

2. **M. tomentosa**, Miers. Dod., fl. June. Leaves simply tomentose beneath, corolla yellowish-green strigosely hairy, very foetid.

*Celastraceae*

**Euonymus dichotomus**, Heyne. Near Bedaguli, fl. May.

*Rhamnaceae*

**Zizyphus rugosa**, Lamk. Common in grassland and deciduous forest 4,500 ft.

*Cituceae*

*Ampelocissus*

1. **A. tomentosa**, Planchi. Pun. Gt. 3,500 ft. Mature flower and fruit not seen.

2. **A. araneosa**, Planch. Near Bedaguli, fruiting Sept.

**Cissus pallida**, Planch. Common in deciduous forest, E.sl. 4,500 ft., fl. June.

*Cayratia*

1. **C. pedata**, Juss. Dup., fl. June.

2. **C. tenuifolia**, Gagnep. At., fl. May.

**Leea crispa**, Linn. A large herbaceous shrub. Leaves rather furry and not glabrous as stated in F.M.P. Petals green, column white, anthers purplish. A very conspicuous element in the undergrowth in deciduous forest of the Malaikadu, fl. June. 1986.

*Sapindaceae*

**Allophyllus Rheedii**, Radlk. 4,500 ft., fl. May.

*Sabiaceae*

**Meliosma Arnottiana**, Walp. Dup., fl. May.

*Leguminosae*

*Papilionatae*

*Crotalaria*

1. **C. ovalifolia**, Wall. At., grasslands, fl. May and June.

2. **C. umbellata**, Wt. Mal., caps. Dec. (7 seeds).

3. **C. mysorensis**, Roth. Mal., fl. Dec.

4. **C. calycina**, Schwank. Gr. 4. At. grasslands, caps. Dec.

5. **C. dubia**, Grah. Dqd., fl. Dec.

6. **C. laevigata**, Lamk. Pun. Gt. 4,000 ft., fl. Sept., Mal., fl. and caps. Dec.

*Indigofera pulchella*, Roxb. Mal., E.sl., fl. Dec.

*Tephrosia tinctoria*, Pers. Pun. Gt. 3,000 ft., fl. Sept..

*Smithia*

1. *S. gracilis*, Benth. (probably) Marshy places in grasslands, fl. Dec.

2. *S. hirsuta*, Dalz. Summit of Anaibetta, fl. May.

*Pycnospora hedysaroides*, R. Par. Pun. Gt. 4,000 ft., Mal., fl. May.

*Alysicarpus racemosus*, Benth. Grassland near At., caps. Dec.

*Desmodium*

1. *D. laxiflorum*, DC. Dod., fl. Dec.

2. *D. Scalpe*, DC. At., fl. Dec.

3. *D. triquetrum*, DC. Mal.

4. *D. gangeticum*, DC. Mal., Pun. Gt. 4,000 ft. in undergrowth, fl. May.  
White-flowered, stamens 9 + 1.

5. *D. polycarpum*, DC. (probably) var. *trichocaulon*, Bak. Mal., fl. Sept.

6. *D. gyrans*, DC. Mal., fl. Sept., pods Dec.

*Shuteria vestita*, W. & A. Mal., fl. and pods Dec.

*Dumasia villosa*, DC. At., fl. Sept.

*Butea frondosa*, Koen. Pun. Gt. 3,500 ft., fl. August.

*Phaseolus Mungo*, Linn. Mal., pods Dec.

*Atylosia rugosa*, W. & A. Grasslands 5,000-6,000 ft., fl. Sept., pods Dec.

*Rhynchosia*

1. *R. rufescens*, DC. Mal., fl. and pods Dec.

2. *R. cyanosperma*, Benth. Mal., fl. Dec.

*Flemingia*

1. *F. strobilifera*, R. Br. Mal., fl. Dec.

2. *F. Grahamiana*, W. & A. Fl. Dec.

3. *F. nilgheriensis*, Wt. Kataribetta, fl. Sept.

*Pterocarpus Marsupium*, Roxb. Dup., Moskal, Mal., fl. May.

*Sophora glauca*, Lesch. Common 4,000 ft. and above, fl. May.

CAESALPINOIDEAE

*Caesalpinia sepiaria*, Roxb. Pun. Gt., margins of sholas 5,000 ft., fl. Dec., pods May and June.

*Cassia*

1. *C. hirsuta*, Linn. (or *laevigata*?) near Bedaguli, fl. and pods June, Sept.

2. *C. Leschenaultiana*, DC. Grasslands 5,000 ft., fl. Sept.

*Bauhinia variegata*, Linn. Pun. Gt. 3,000 ft., fl. Dec.

MIMOSOIDEAE

*Entada scandens*, Benth. Near Bedaguli.

*Acacia concinna*, DC. Pun. Gt. Bedaguli, fl. June.

Rosaceae

*Rubus*

1. *R. fulvus*, Focke. Common, margins of sholas, 5,000 ft., fl. and fruits May, June.

2. *R. ellipticus*, Sn. Common, margins of sholas, 5,000 ft., fruit Dec.

#### Saxifragaceae

*Parnassia mysorensis*, Heyne. Very common in wet places amongst rocks above 5,000 ft., fl. June-Sept.

#### Crassulaceae

##### Kalanchoe

1. *K. glandulosa*, Hockett, (K) Mal., on rocks, fl. Dec. Identified by C. E. C. Fischer, but calyx lobes divided to base. 2087.

2. *K. olivacea*, Dalz. At., on rocks, fl. Jan. Calyx and corolla lobes with short curved tails.

3. *K. Bhidei*, T. Cooke. Below Bel., on rocks, fl. Dec. 2078.

4. *K. laciniata*, DC. (K) E.sl. 4,000 ft., fl. Dec. 2089, 2091. Leaves with three leaflets only.

#### Droseraceae

*Drosera peltata*, Sm. Very common, grassland and on wet rocks, 5,000 ft. and above, fl. June, Sept.

#### Haloragidaceae

*Myriophyllum intermedium*, DC. Attikan Tank, Devakeri, fl. Dec. 2063.

#### Combretaceae

*Terminalia crenulata*, Roth. Moskal, Mal., fl. May.

#### Myrtaceae

*Eugenia bracteata*, Roxb. ?, below Bedaguli, fl. May.

#### Melastomaceae

*Osbeckia cupularis*, Don. Grassland, 5,000 ft. and above, fl. Sept.

#### Onagraceae

*Jussiaea suffruticosa*, Linn. In marshes and along streams, 4,000 ft., Dod., below Bedaguli, fl. and seed June.

*Oenothera rosea*, Ait. A very common weed at 5,000 ft.

#### Passifloraceae

*Passiflora edulis*, Sims. Run wild and very common above 4,000 ft. Climbing to and pendant from the tops of tall trees on edges of sholas. Ripe fruit May-Sept.

#### Cucurbitaceae

*Trichosanthes villosula*, Cogn. (K) Dup., fl. Sept., Bel., fl. May, 1980-2. Nand. At., fl. May.

*Byronopsis laciniosa*, Nand. At., fl. May.

#### Melothria

1. *M. perpusilla*, Cogn., Dup.-Moskal, fl. June.

2. *M. amplexicaulis*, Cogn. At., fl. May.

3. *M. telosperma*, Cogn. (probably) Dup., fl. Sept.

#### Begoniaceae

*Begonia malabarica*, Lamk. Frequent along streams in evergreen forest at 4,500 ft., fl. May and June.

#### Aizoaceae

*Molugo pentaphylla*, Linn. Devakeri, 5,000 ft., fl. May.

*Umbelliferae*

- Hydrocotyle javanica**, Thunb. Sholas, 5,000 ft. and above, fl. May, June, Sept.  
**Bupleurum virgatum**, W. & A. Margins of sholas, 5,000 ft. and above, At., fl. May.  
**Pimpinella monocia**, Dalz. Grassland, Dup., fl. Sept.  
**Heracleum Candolleianum**, Gamble. Grassland, 5,000 ft. and above, fl. Sept.

*Araliaceae**Schefflera*

1. **S. stellata**, Harms. E.sl. 4,500 ft., fl. June.
2. **S. Wallichiana**, Harms. Dup.

*Caprifoliaceae*

- Lonicera Leschenaultii**, Wall. Dod., Mal., fl. June.

*Rubiaceae*

- Wendlandia Notoniana**, Wall. Common, margins of sholas, grasslands at 4,500 ft., fl. May.

*Oldenlandia*

1. **O. herbacea**, Roxb. Dup., fl. Sept.
2. **O. dichotoma**, Koen. Forest undergrowth and grasslands, 5,000 ft., Devakeri, fl. June-Sept.

*Anotis*

1. **A. quadrilocularis**, Benth. & Hook. Devakeri, fl. Sept.
2. **A. monosperma**, Benth. Kataribetta, fl. Sept., above Dup., fl. May. Flower white.

**Ophiorrhiza hirsutula**, Wt. Moist banks in evergreen forest, 4,500 ft., fl. May. Usually semiprostrate and herbaceous, sometimes erect and suffruticose. 1949.

**Mussaenda laxa**, Huach. (or glabata?) In thickets along streams in deciduous forest at 4,500 ft., fl. and fruit June.

**Chomelia asiatica**, O. Kze. var. *rigida*, Gamb. Margins of sholas, E. ridge, fl. May.

**Randia Brandisii**, Gamble. Common, deciduous forest 3,000-4,000 ft., fl. and fruit May and June. Flowers first white, then bright yellow.

*Knoxia*

1. **K. mollis**, W. & A. Mal., fl. June.
2. **K. Wightiana**, Wall.

**Plectronia didyma**, Kurz, var. *umbellata*, Gamb. Shola forest, 5,000 ft.

**Ixora Notoniana**, Wall. Shola forest, fl. May. Flowers red on trees in the open, e.g. near summit of Anaibetta, white on those in sholas.

*Pavetta*

1. **P. breviflora**, DC. var. *glaberrima*, Brem. Dod., fl. May. Very fragrant.
2. **P. tomentosa**, Linn. Common, open deciduous forest, 4,000 ft., fl. May.

*Psychotria*

1. **P. Thwaitesii**, Hook. f. Common in sholas, Dup. fl. May. Calyx lobes very small and oblique.
2. **P. elongata**, Hook. f. Common, sholas 5,000 ft., Dup., fl. May.
3. **P. bisulcata**, W. & A. Sholas, 5,000 ft., fruit June.

*Chasalia curviflora*, Thw. Sholas E. ridge, fl. May and June. 2138.

The mechanism for cross-fertilisation is interesting. The corolla tube is long and the lobes are short, valvate and bright yellow. On first opening, the lobes remain attached at their tips but separate below so that there are 5 wide slits. The 2-lobed stigma is opposite these slits but the anthers are within the upper part of the tube. Later the corolla lobes separate completely and become recurved and the tube splits for some distance down one side. The anthers that thus become exposed then curve outwards.

*Lasianthus coffeoides*, Fys. Dup., fl. May.

#### Borreria

1. *B. stricta*, K. Sch. Fl. Sept.

2. *B. ocyroides*, DC.? Caps. June.

*Rubia cordifolia*, Linn. E.sl., fl. Sept. At., fl. Dec.

#### Compositae

##### Vernonia

1. *V. Monosis*, C. B. C. Very common in sholas on the eastern ridge, 5,000 ft., fl. April, seeds May.

2. *V. divergens*, Edgw. Common, fl. Dec.

3. *V. cinerea*, Less. Common, fl. May.

*Elephantopus scaber*, Linn. Mal.

*Conyza stricta*, Willd. Grasslands, 5,000 ft., fl. Sept.

*Blumea membranacea*, DC. Fl. Dec.

*Laggera alata*, Sch.-Bip. Fl. Dec.

*Elepharisperma subsessile*, DC. Pun. Gt., 3,000 ft., fl. June.

##### Anaphalis

1. *A. subdecurrens*, Gamble. Kataribetta, fl. Sept., May.

2. *A. Lawii*, Gamble. Grasslands, Dup., fl. Sept., Dec.

*Helichrysum buddleioides*, DC. At., fl. Dec.

*Vicoa indica*, DC. Mal., fl. Dec.

*Siegesbeckia orientalis*, Linn. Dod., Mal., fl. Dec.

*Spilanthes acmella*, Murr. Mal., fl. Dec.

*Bidens pilosa*, Linn. A very common and troublesome weed, 4,000-5,500 ft.

*Tridax procumbens*, Linn. Pun. Gt. 3,000 ft.

*Artemisia parviflora*, Buch.-Ham. Very common on grassland, fl. Sept., Dec.

##### Emilia

1. *E. scabra*, DC. Anaibetta and other hilltops, 5,500-6,000 ft., fl. May.

2. *E. sonchifolia*, DC. Grasslands, 5,000 ft., fl. Sept.

*Notonia grandiflora*, DC. E.sl., 4,000 ft.

##### Senecio

1. *S. Edgeworthii*, Hook. f. Slopes of Kataribetta, 5,500 ft., fl. May. Mal. on rocks, fl. Dec.

2. *S. corymbosus*, Wall. At., fl. Dec.

3. *S. intermedius*, Wt. At., fl. Dec.

*Crepis acaulis*, Hook. f. Anaibetta.

*Erechthites valerianifolia*, DC. Dod. below Honnametti, fl. May.



**Guizotia abyssinica**, Cass. Cultivated by the Sholagas and run wild.

**Eupatorium glandulifera** has invaded the western ridge, especially common near Honnametti and At., 5,000 ft. and above.

#### Campanulaceae

##### Lobelia

1. **L. trigona**, Roxb. In marshes, Bel., Dod., fl. May and June.
2. **L. trialata**, Buch.-Ham. On wet rocks, Moskal, Devakeri, Honnametti, fl. Sept. 1920.
3. **L. nicotianaeifolia**, Heyne (probably var. **trichandra** C.B.C.) In deciduous forest, Mal., fl. Dec.
4. **L. excelsa**, Lesch. On the borders of sholas, 5,000 ft. and above, At., May, Dec. Leaves glabrous above, softly hairy below, corolla tube purplish, lobes white or yellowish.

**Cephalostigma flexuosum**, Hook. f. Mal., fl. Dec.

**Campanula fulgens**, Wall. Frequent in grassland, east ridge, 5,000 ft., fl. Sept.

#### Myrsinaceae

**Ardisia solanacea**, Roxb. Common, evergreen forest along streams at 4,000 ft. Dod., Moskal, fl. May, Dec.

#### Symplocaceae

**Symplocos spicata**, Roxb. Common in sholas, Dup., fl. June.

#### Oleaceae

##### Jasminum

1. **J. Rottlerianum**, Wall. Near At., fl. May.
2. **J. Ritchiei**, C.B.C. Mal.
3. **J. brevifolium**, A. DC. fl. Sept.
4. **J. flexile**, Vahl. Mal., fl. Dec. Very sweet-scented.

**Linocera intermedia**, Wt. Pun. Gt., 4,000-5,000 ft., fl. June.

**Olea glandulifera**, Wall. Sholas, At.

**Ligustrum Perrottetii**, A. DC. Common on margins of sholas, 5,000 ft., fl. May.

#### Apocynaceae

**Rauwolfia densiflora**, Benth. Margins of sholas, At.

**Aganosma cymosa**, G. Don.

#### Asclepiadaceae

**Cryptolepis Buchanani**, R. & S. Common above Bedaguli, 4,500 ft., fl. May.

**Holostemma annulare**, K. Schum. Pun. Gt., 4,000 ft., fl. Sept.

**Cynanchum pauciflorum**, R. Br. Near Honnametti, fl. Dec. (probably; follicles not seen).

**Sarcostemma Brunonianum**, W. & A. Esl., Gundimala up to 5,000 ft., fl. Sept. Has a heavy scent.

#### Tylophora

1. **T. fasciculata**, Ham. Grassland near At., fl. May.
2. **T. capparidifolia**, W. & A. At., fl. June.

**Hoya pauciflora**, Wight. Common on shola trees 4,500-5,500 ft., fl. May, seeds Sept. 2223.

**Hoya pendula**, Wt.? Dup., fl. May.

## Ceropegia

1. *C. pusilla*, W. & A. Common on the eastern ridge 5,000-6,000 ft. usually in rock crevices on hilltops, Kataribetta, Dup., fl. May and June, follicles Sept. 1876-7.

2. *C. flmbriifera*, Bedd. Mal. 4,000 ft. in pockets of earth on slab rock, E.sl. below Dup. 5,000 ft., fl. June, 1874-5, 2220. The flowers are described as solitary in F.M.P. There is a peduncle with two buds only one of which matures. Corolla lobes bright green inside, outside and up to about  $\frac{1}{4}$  of the tube dark purple, tube outside light green, glab. inside dark purple with vertical white stripes.

3. *C. elegans*, Wall. Mal., fl. Sept. 2105.

4. *C. candelabrum*, Linn. E.sl., fl. Sept. 2221. Corolla lobes greenish-yellow below, purple at tips, ciliate within.

*Caralluma (Boucerosia) lasiantha*, N.E. Br. Amongst rocks at 4,000-5,000 ft. E.sl., fl. June. Flowers not strictly umbelled, but inflorescence repeatedly branched so as to form a head. Bracts slender cylindrical ciliate on upper  $\frac{1}{3}$ , yellowish. Corolla at back glabrous subglossy, white at centre deepening to crimson almost black at tips of lobes, upper surface crimson-black velvety with straggling hairs, outer surface of corona cream, lobes and inner surface blackish-crimson. Smell very offensive.

## Loganiaceae

*Fragraea obovata*, Wall. Common and conspicuous in sholas, 4,000-5,000 ft., fl. May, June.

*Gardneria ovata*, Wall. Common on margins of sholas, 5,000 ft., fl. May.

## Gentianaceae

*Exacum bicolor*, Roxb. Common and conspicuous in grassland, 5,000 ft., fl. Sept. Caps. June. Corolla white and purple.

*Gentiana pedicellata*, Wall. var. *Wightii*, Kusn. Common, grassland at 5,000 ft. and above, fl. June, Sept.

## Canscora

1. *C. diffusa*, R. Br. Western slopes, 4,500 ft., fl. Dec.

2. *C. decussata*, Roem and Sch. Mal., Pun. Gt., fl. Dec.

## Swertia

1. *S. minor*, Knobl. Frequent in short grass above 5,000 ft., fl. Sept. Flowers blue.

2. *S. angustifolia*, Buch.-Ham. var. *pulchella*, Burck. Mal. 4,500 ft., fl. Dec. Petals white marked with dark blue, scale of nectary green.

3. *S. trichotoma*, Wall. At. on grasslands, Petals smaller than given in F.M.P. but acuminate. No scale on nectary.

4. *S. corimbosa*, Wt. At. 5,000 ft., fl. Dec.

## Boraginaceae

*Trichodesma zeylanicum*, R. Br. Near Dup., fl. Sept.

*Cynoglossum denticulatum*, A. DC. var. *zeylanicum* C.B.C. Common, deciduous forest and margins of sholas, 4,000-5,000 ft., fl. June.

## Convolvulaceae

## Argyreia

1. *A. cuneata*, Ker.-Gawl. Common Pun. Gt., fl. May.

2. *A. nellygherrya*, Choisy. Pun. Gt. 4,500 ft., fl. June. Flower rose-purple.

3. *A. sericea*, Dalz. & Gibs. Dup., fl. Sept. 2,222.

**Cnoolvulus flavus**, Willd. Common on grassland near Dup. 5,500 ft., fl. May, Bel.

**Cuscuta reflexa**, Roxb. Common on *Strobilanthes*, At., fl. Dec.

#### *Solanaceae*

##### *Solanum*

1. **S. nigrum**, Linn. Dod., fl. May.
2. **S. denticulatum**, Blume. Margins of sholas, E. ridge, fl. May.
3. **S. giganteum**, Jacq. Common, margins of sholas.
4. **S. torvum**, Swartz. E. ridge, 4,500 ft., fl. and fruit May.
5. **S. indicum**, Linn. Pun. Gt., fl. May.

#### *Scrophulariaceae*

##### *Linnophila*

1. **L. hirsuta**, Benth. Marshes near Bel. 4,500 ft., fl. May. 1987, 2108.
2. **L. gratioloides**, R. Br. var. **elongata** Benth. At. pond 5,000 ft., fl. Dec. 2075.

**Dopatrium juncum**, Buch.-Ham. Devakeri, fl. Sept.

**Vandellia pedunculata**, Benth. In elephant swamps near Dod. 4,000 ft., fl. June. 2107.

##### *Ilysanthes*

1. **I. hyssopioides**, Benth. Pool near summit of Anaibetta (5,700 ft.) Devakeri (5,000 ft.), fl. May, Sept. 2118.
2. **I. veronicaefolia**, Urban. Common along streams 4,500-5,500 ft., fl. May, Sept. 1951, 2109.

**Buchnera hispida**, Ham. Common, deciduous forest 4,500 ft., Mal., fl. Dec. 2069, 2070.

##### *Striga*

1. **S. lutea**, Lour. Common amongst grass throughout the area, fl. June, Sept.
2. **S. euphrasoides**, Benth. E.sl. 5,000 ft., fl. Sept. (small form). Pun. Gt. 3,500 ft., fl. Sept. (very scabrous form up to 13 ins. high).

**Sopubia trifida**, Ham. Common amongst coarse grass at 5,000 ft., fl. June, Dod., fl. May. This plant does not appear to have been recorded as parasitic. An examination of the root system of a number of plants found on these hills showed it to be a root parasite on cotton grass and several other grasses.

**Pedicularis zeylarica**, Benth. Common, grasslands at 5,000 ft., fl. Sept. The plant found is the diffuse form with white or very pale pink flowers; the erect form with deep pink flowers does not appear to occur.

**Calceolaria mexicana**, Benth. is common in damp places above about 4,000 ft.

#### *Lentibulariaceae*

##### *Utricularia*

1. **U. uliginosa**, Vahl. Moist places in grassland, fl. June, Sept.
2. **U. graminifolia**, Vahl. Margin of stream, Moskal, fl. June, Dec.
3. **U. striatula**, Sm. On wet rocks, Moskal—At., fl. Sept.

#### *Gesneriaceae*

**Aechynanthus Perrottetii**, A. DC. Very common on trees in sholas at 5,000 ft. and above, fl. Sept., caps. Dec. Corolla tube scarlet, lobes dark purple marked with yellow : glandular hairs on margins of lobes only.

**Didymocarpus tomentosa**, Wt. In rock crevices on hilltops, 5,000 ft. and above, fl. May, caps. June.

**Klugia Notoniana**, A. DC. Along streams at 4,000 ft., and above, Badaguli, At., fl. May, Dec.

#### *Bignoniaceae*

**Radermachera xylocarpa**, K. Schum. Mal., fl. April

#### *Acanthaceae*

**Thunbergia fragrans**, Roxb. Common, 4,000-5,000 ft., fl. June, Sept., Dec.

**Meyenia Hawtayneana**, Nees. Pun. Gt. at 3,500 ft. on stony hillside, fl. May, ripe caps. Sept. Three forms with differently coloured corollas were found growing together: (1) tube orange, lobes white; (2) tube orange, lobes violet; (3) tube orange, lobes mauve.

**Ruellia Beddomei**, C. B. Clarke. Pun. Gt. 3,500 ft., fl. Sept. Not previously reported from S. India.

**Mieranthus oppositifolius**, Wendl. Dod., fl. Dec.

#### *Strobilanthes*

1. **S. Kunthianus**, T. And. Very common in grassland at 5,000 ft. and above. Considerable areas of grassland are almost completely occupied by this plant.

2. **S. pulneyensis**, C.B.C. Frequent as undergrowth in sholas and evergreen forest at 4,500 ft. Dod., Bel. General flowering June 1938, plants dead 1939.

3. **S. Heyneanus**, Nees. Common in sholas and evergreen forest, growing with the above. In full flower Sept. 1938.

4. **S. luridus**, Wt. Forming a dense undergrowth in many sholas at 4,500-5,500 ft. Not seen in flower in 1938 or 1939.

5. **S. foliosus**, T. And. (probably, not in flower). In shola forest above 5,000 ft. forming an impenetrable undergrowth and becoming a small tree.

#### *Andrographis*

1. **A. alata**, Nees. Near Pun., fl. April.

2. **A. Neesiana**, Wt. Pun. Gt., 3,000-4,000 ft., fl. June.

3. **A. lineata**, Nees. Pun. Gt. 3,500 ft., fl. June. Margins of sholas 5,000 ft., fl. Dec.

4. **A. serpyllifolia**, Wt. Pun. Gt. 3,000-3,500 ft., fl. May, June.

#### *Barleria*

1. **B. involucreta**, C.B.C. Margins of sholas on both ridges Nees. var. **elata**, C.B.C. at 5,000 ft., At., fl. Dec., Dup., fl. Sept. A very beautiful shrub up to 10 ft. high in favourable places.

2. **B. sp.** (very near **B. Gibsoni**, Dalz., K.) Pun. Gt. 3,500 ft., fl. Sept. Corolla tube 1.5 in. or more, dark purple, white at base, more or less dilated below and narrowly funnel-shaped above, finely glandular, lobes quite white, ovate 7/5 in. long. A branching undershrub up to about 2 ft. high.

3. **B. Morrisiana**, Barnes and Fischer (*Kew Bull.* No. 10, 1939) Pun. Gt. 3,000-3,500 ft., fl. April and May. Leaves dull green above pale below, mid-rib reddish, margin reddish hispid. Stem dark red sparingly hispid. Outer pair of calyx lobes reddish-brown, green near mid-rib. Corolla tube white, lobes mauve, 5 stamens all fertile, pollen profuse.

**Asystasia violacea**, Dalz. Margins of sholas 5,000 ft. Along streams 4,000-4,500 ft., fl. and caps. May and June. Flowers mauve. The leaves often have crenulate margins and it is very difficult to decide whether this plant should be classified as *A. violacea*, Dalz. or *A. crispata*, Benth.

**Rungia parviflora**, Nees. var. **pectinata**, C.B.C. Mal., fl. Dec.

**Dichoptera cuneata**, Nees. Mal., fl. June.

## Justicia

1. *J. Belonica*, Linn. Pun. Gt. 3,000 ft., fl. Sept.
  2. *J. nilgherrensis*, Wall. In dry stony ground, Pun. Gt. 3,000-3,500 ft., fl. and caps. May and June.
  3. *J. procumbens*, Linn. (?) Mal., fl. Dec.
  4. *J. simplex*, D. Don. (?) Dup., fl. Sept.; Mal., fl. Dec. Diffuse, silvery hairs.
  5. *J. diffusa*, Will. Dup., fl. June.
- Rhinacanthus communis*, Nees. Deciduous forest, Mal., fl. Dec.

## Verbenaceae

- Lantana indica*, Roxb. E.sl. 4,500 ft., fl. May.
- Stachytapheta indica*, Vahl. Bedaguli, stream bank, fl. Sept.
- Callicarpa lanata*, Linn. Common on margins of sholas on both ridges, 5,000 ft., fl. May.

## Clerodendron

1. *C. serratum*, Spreng. Common in deciduous forest, 4,000 ft., fl. June.
  2. *C. infortunatum*, Linn. Common on margins of sholas, At., Sept.
- Vitex altissima*, Linn. Pun. Gt. 3,000 ft., fl. May.

## Labiatae

- Orthosiphon diffusus*, Benth. Pun. Gt., 3,500 ft., fl. May, Sept.

## Electranthus

1. *P. nilgherricus*, Benth. E.sl. 4,500 ft., fl. Dec.
2. *P. Coetsa*, Buch.-Ham. Very common in grassland at 4,500-5,000 ft. In places the grassland has been densely invaded.
3. *P. coleoides*, Benth. Mal. in moist places, 4,000 ft., fl. Dec.

## Coleus

1. *C. barbatus*, Benth. Anaibetta, 5,500 ft., fl. Sept.
2. *C. malabaricus*, Benth. Dup., fl. Dec.

## Anisochilus

1. *A. carnosus*, Wall. Mal., on rocks in deciduous forest, E.sl., 3,000 ft., fl. Dec.
2. *A. dysophylloides*, Benth. Hilltops above Dup., fl. Dec.

## Pogostemon

1. *P. pubescens*, Benth. E.sl. 4,500 ft., fl. Dec.
  2. *P. speciosus*, Benth. Mal., fl. Dec.
- Dysophylla auricularia*, Blume. At., fl. Dec.

## Scutellaria

1. *S. violacea*, Heyne. In sholas, 5,000 ft. and above, fl. May-Sept.
2. *S. Colebrookiana*, Benth. (K) At. and the western slopes in grassland, fl. Dec. 2074. Flowers crimson.

## Leucas

1. *L. zeylanica*, R. Br. At.
2. *L. montana*, Spreng. (K) Bel., fl. June. A shrubby plant up to 5 ft. high.



3. *I. marrubioides*, Desf. (K) Below Bel., fl. Sept.

4. *I. hirta*, Spr. Pun. Gt. 3,500 ft., fl. Sept.

5. *L. prostrata*, Gamble. Dup., fl. May.

*Gomphostemma Heyneanum*, Wall. var. *Rottleri*, Prain. Mal., fl. Sept.

#### *Amarantaceae*

*Celosia* sp. Devakeri.

*Banalia thyrsoidea*, Moq. Dod., fl. May.

#### *Polygonaceae*

##### *Polygonum*

1. *P. plebejum*, R. Br. Devakeri, fl. April.

2. *P. glabrum*, Willd. Devakeri, in water, fl. May.

3. *P. barbatum*, Linn. Near Punjur, fl. June.

4. *P. flaccidum*, Meissn. Mal., Dod., fl. May.

5. *P. punctatum*, Buch.-Ham. Devakeri, fl. Sept.

6. *P. chinense*, Linn. At., fl. May, Sept., Dec.

#### *Piperaceae*

*Piper hymenophyllum*, Miq. Marshes near Bedaguli, Mal., At., fl. May, June.

#### *Peperomia*

1. *P. Heyneana*, Miq. Dup., At., fl. June. (or *Wightiana* in F. N. C.?)

2. *P. portulacoides*, A. Dietr. Bedaguli, fl. June.

3. *P. dindigulensis*, Miq. On rocks along stream below Bedaguli.

#### *Elæagnaceae*

*Elæagnus Keloga*, Sch. Margins of sholas, At., fl. Dec. Very sweet-scented.

#### *Loranthaceae*

##### *Loranthus*

1. *L. Wallichianus*, Sch. Dod., fl. June.

2. *L. intermedius*, Wt. Dup., fl. May.

3. *L. cordifolius*, Wall. Below Dup., fl. June, on *Grewia tilaefolia*, Vahl.

4. *L. bracteatus*, Heyne. E.sl. 4,000 ft., fl. June on *Grewia* sp.

5. *L. tomentosus*, Heyne. Dod. On *Viscum orbiculatum* which was on *Pavetta tomentosa*.

6. *L. recurvus*, Wall. Dup.-Moskal, fl. Sept.

7. *L. courtallensis*, Gamble. Dod., Dup., fl. June on *Grewia tilaefolia*, Vahl.

8. *L. nelscherrensis*, W. & A. Dup., fl. Sept.

*Elytranthe loniceroides*, Engler. Mal., fl. May, on *Grewia tilaefolia*, Vahl.

#### *Viscum*

1. *V. orbiculatum*, Wt. (?) Dod., fl. May, on *Pavetta tomentosa*. Most flowers of triads ♀ only, occasionally one ♂ in centre of triad, and other two flowers not open. Used as host by *Loranthus tomentosus*.

2. *V. angulatum*, Heyne. At., fl. June, on *Olea glandulifera*, Wall.

3. *V. articulatum*, Burm. var. *dichotomum*, Kunz. Dimbam Ghat, fl. April,

*Euphorbiaceae*

*Euphorbia*

1. *E. cristata*, Heyne. Pun. Gt. 3,500 ft., fl. June (erect form 10 ins. high).
2. *E. Rothiana*, Spr. On margins of sholas, 5,000 ft., fl. May.
- Bridella retusa*, Spreng. E.sl. 4,000 ft., fl. April.
- Phyllanthus, simplex*, Retz. E.sl., fl. Sept.
- Re'dia floribunda*, Wt. Banks of stream below Bedaguli, fl. May.
- Embellica offic'inalis*, Gaertn. Common up to 5,000 ft.
- Breynia patens*, Rolfe. Pun. Gt., fl. May.
- Gloch'dion velutinum*, Wt.
- Bischofia javanica*, Bl. Used as shade for coffee.
- Mallotus Beddomei*, Hook. f. Fl. May.
- Homonola riparia*, Lour. Stream bed near Bedaguli, fl. May. A small shrub 2-3 ft. high.
- Acalypha brachystachya*, Hornem. At., fl. Sept.

*Moraceae*

*Ficus*

1. *F. Arnottiana*, Miq. E.sl. between rocks, 4,000 ft.
2. *F. glomerata*, Roxb. Common in sholas, At. Receptacles mature Sept.
- Artocarpus integrifolia*, Linn. Sholas, 5,500 ft., At. apparently wild.
- Dorstenia indica*, Wt. At., fl. Sept.

*Urticaceae*

- Girardinia zeylanica*, Dcne. Dod. in swamps, fl. Dec.
- Procris Wightiana*, Wall. At., fl. Dec. Growing on trees, the stems becoming flaccid and hanging down in the dry months.
- Pilea trinerva*, Wt. Along streams in sholas, Dod., Dup., fl. June.

*Burmanniaceae*

- Burmannia caelestis*, Don. In marshy places, not frequent, Moskal, fl. June, Sept., Dec. 1967, 2064. Flowers blue, stems up to 4.5 ins. long, sometimes branching from near the base.

*Orchidaceae*

*Oberonia*

1. *O. iridifolia*, Lindl. var. *denticulata*, Hook. f. On shaded branches of trees along streams at about 4,000 ft., Mal. Bedaguli, fl. Sept., caps. June. 1931, 1959. Flowers have pedicels as long as the ovaries, and are not sessile as stated in F.M.P.
2. *O. verticillata*, Wt. On exposed branches of trees at 5,000 ft., Devabetta slopes, fl. Sept. 1930.
3. *O. Brunoniana*, Wt. Common on trees and shrubs at 5,000 ft. At., fl. Sept. and later. 1940. The leaves are usually very thick and dull brownish.
4. *O. Lindleyana*, Wt. On branches of trees in sholas at 5,000 ft., At., fl. Sept. 2083. 2104. Sepals, petals and lip straw-coloured except the concave hemispherical disc which is orange-brown. Transplanted to Tambaram, where it flowered Dec., Jan.

## Microstylis

1. *M. versicolor*, Lindl. Common in sholas at 5,000 ft. upwards, fl. Sept. Plants are usually scattered but in places dense patches were found occupying exclusively several square feet of ground.

2. *M. Stocksii*, Hook. f. In sholas at 5,500 ft. Dup., fl. June, caps. Sept. 1906. Flowers pale amber.

3. *Microstylis* sp. ? On big rock on Attikan-Moskal bridlepath, fl. Sept. Sepals and petals dark crimson to liver-coloured; lip bright chrome yellow, column pale yellow. Scape bright purple. Bracts purple becoming green at tip. Capsule purple.

## Liparis

1. *L. platyphylla*, Ridl. In deciduous forest, western slopes 4,000-5,000 ft., fl. Sept. 1902. Sepals and petals pale orange, lip dull orange to pale olive green, surface dull except for a glossy central area. Flowers somewhat unpleasant-smelling.

2. *L. Wightiana*, Thw. In rock crevices on summit of hill on east ridge, 5,500 ft., fl. Sept. 2181-2. Scape dark crimson, square with 2 smaller ribs on each face. Leaves bright green. Sepals and petals very pale green or yellow; lip dull purplish, central area glossy and greenish, calli green. Pokki Betta, fl. Aug., lip yellowish-green.

3. *L. odorata*, Wt. (Lindl.) Indeciduous forest, western slopes, 4,000-5,000 ft., fl. July, caps. Sept. 1880-81. Sepals, petals and lip liver-coloured to dark crimson; column whitish.

4. *L. atropurpurea*, Lindl. 4,000-5,000 ft., fl. Sept. 1961. Belagi, At., fl. Aug. Common.

## Dendrobium

1. *D. nanum*, Hook. f. At. Very common at 4,500-5,500 ft. on branches of isolated trees especially *Wendlandia Notoniana*, fl. June-Sept., caps. June. 1927. Sepals and petals white. Mid-lobe of lip greenish with a white-fringed margin, a pale green strap-shaped palate with a toothed end running along the upper side of the claw and ending near the middle of the lobe; side lobes greenish spotted and veined purple, margins toothed. Flowers honey-scented.

2. *D. nutans*, Lindl. On branches of trees on margins of sholas on the eastern ridge at 5,500-5,800 ft., fl. April and May. 1883, 2126. Sepals and petals deep yellow, lip orange, with 3 wavy ridges.

3. *D. macrostachyum*, Lindl. On trees near Moskal, 4,500 ft., fl. May. 1884. Sepals and petals pale greenish-yellow, lip yellowish with crimson veins, margin fimbriate, hairy on veins. Flowering stems covered with the silvery grey-veined leaf bases. Flowers scented.

4. *D. heterocarpum*, Wall. Frequent throughout the area on tree trunks at 4,500-5,500 ft., fl. Dec. and Jan. 1939, 2076-7, 2082. Sepals and petals pale yellow or greenish-yellow, disc of lip covered with chocolate or brownish-purple gland-like hairs with round white tips. Flowers very delicately sweet-scented. Flowers only on branches from which the leaves have disappeared, 2 or 3 at a node, very shortly racemed.

## Bulbophyllum

1. *B. fusco-purpureum*, Wt. Very common on branches of trees in shola forest, at 5,000 ft., fl. May. 1897. Sepals dull yellow and purplish, lip dark purple, lighter on under side, lateral petals purplish. Pseudobulbs up to 7 cms. × 4 cms., leaves up to 19 cms. × 5 cms.

## Cirrhopetalum

1. *C. fimbriatum*, Lindl. Locally common on rocks and branches of trees at 4,500-5,000 ft. Moskal, Devakeri, fl. April and May, caps. June. 1911-12, 1925-6.

Scape purplish with two scarious bracts. Lateral sepals dark crimson to liver-coloured; dorsal sepal and petals similar in colour but fimbriations yellowish or greenish. Lip concave or longly boat-shaped, almost black on the margin, becoming pale greenish near the centre. The lateral sepals of older flowers may be dull yellowish flushed with dark crimson by bleaching.

2. **C. Gamblei**, Hook. f. Common on shaded tree trunks at 4,500 ft. Moskal, At., Dup., fl. May and June. 1934-5, 1936-7. Some plants have the sepals, petals and lip all clear lemon yellow, others have the large lateral sepals yellow and the dorsal sepal and petals heavily streaked with brownish-crimson, and other plants have all the sepals and petals heavily marked with dull crimson. Pseudobulbs finely wrinkled, yellowish to dark green, glossy. Flowers have a carrion smell which suggests fly fertilisation.

3. **C. Proudlockii**, King and Pantl. Near Moskal, fl. June. 1993.

#### Chrysoglossum

1. **C. maculatum**, Hook. f. East ridge along streams in shola at 5,500 ft. Bel. fl. May and June. 2127, 2130, 2149. Grows in association with *Calanthe Masuca*. Sepals and lateral petals green spotted purple, lip white, mid-lobe acute with margins turned in, spotted purple, side-lobes erect, spotted purple, base of mid-lobe with a raised palate with 2 keels, narrowing and becoming 3-keeled below, claw auricled, mentum yellow, ovary green.

#### Eria

1. **E. baccata**, Lindl. Very common on branches of trees and rocks at 5,500-6,000 ft. on both ridges, fl. June. 1941.

2. **E. Dalzelli**, Lindl. At., fl. Aug.

3. **E. nana**, A. Rich.

4. **E. polystachya**, A. Rich. Frequent on tree trunks at about 5,500 ft. on both ridges, fl. Sept. 1891-2. Sepals and petals pale straw-coloured. Lip with deep yellow margin and 4 dark brown ridges on upper surface.

5. **E. pauciflora**, Wt. Frequent on tree trunks 5,000-5,500 ft. on both ridges, fl. Sept. 1914-5. Often grows in very large masses extending for several yards up the trunk or along the larger branches of trees. Sepals and petals pure white. Lip cream-coloured with a raised yellow Y on the upper surface.

#### Coelogyne

1. **C. odoratissima**, Lindl. Dup. Flowers not seen. Identified by its characteristic pseudobulb and leaves.

2. **C. nervosa**, A. Rich. Frequent on trees on both ridges at 5,000 ft. and above, fl. June-Sept. 1913.

#### Calanthe

**C. Masuca**, Lindl. Frequent in sholas at 5,000 ft. and above, fl. June-Sept. Scape and inflorescence up to 120 cms. long. Lip bright purple, petals and sepals white flushed with purple, calli on lip orange becoming reddish-purple.

#### Eulophia

1. **E. pratensis**, Lindl. Amongst grass at 5,000 ft., Dup., fl. June. 2174. Not common.

2. **E. nuda**, Lindl. In deciduous forest at 4,000-4,500 ft., fl. April and May. 1989. There appear to be two colour forms of this species: (1) corolla yellowish-green, sepals and, to less extent, petals marked purplish-brown on back, spur and lip yellowish-green, disc pale purple, only slightly tubercled on veins; (2) sepals and backs of petals dull, dark purple, inner side of petals and disc of lip bright purple to pink, lower part of lip pale, spur more acute.

#### Cymbidium

**C. aloifolium**, Sw. Eastern slopes 4,000-4,500 ft., June, caps. June. 2145, 2150. Sepals and petals cream-coloured with a brownish-red median stripe. Side

lobes and apical part of mid-lobe of lip dark crimson, basal part pale yellow, whole surface velvety. Leaves thick, erect, bright green, glossy. Bracts at base of scape pale brown.

#### Geodorum

**G. densiflorum**, Sch. In evergreen forest 4,000-4,500 ft., Mal. Bedaguli, fl. June. 2154, 2197. Sepals and petals pale mauvish-pink, lip broadly boat-shaped, margin of lip purplish-pink, disc yellow, laminated.

#### Polystachya

**P. purpurea**, Wt. Frequent on trees and rocks 4,000-5,000 ft., fl. May and June. Luisia

1. **L. teretifolia**, Gaud. Frequent on trees, E.sl., Pun. Gt. 4,000-4,500 ft., fl. and caps. June. Sepals and petals greenish-yellow; lip yellow heavily blotched dark purple, the side lobes and base becoming almost completely purple.

2. **L. tenuifolia**, Bl. E.sl. 4,500 ft., fl. June. 2144. Basal part of lip triangular, very dark crimson, glossy; apical part fiddle-shaped heavily mottled deep crimson on a whitish ground, velvety. Sepals and petals dull greenish-yellow, lateral sepals with pointed concave tips.

#### Rhynchostylis

**R. latifolia**, Fisch. ? Moskal, on trees 4,500 ft., fl. Oct., caps. Sept. 2151. Leaves 9.5×2.5 cms. oblong slightly unequal at tip, thick and fleshy, very slightly keeled. Spikes dense-flowered, flowers sessile, base of ovary in a pit in the spike, about 4 mm. long. Sepals ovate brownish-green on back, two lateral sepals keeled. Lateral petals pale green. Scrotum pale green, epichyle triangular with a large conical appendage on underside, white with crimson calli above and a pit between the calli.

#### Chilochista

**C. pusilla**, Sch. ? On small branches of trees and shrubs in shola and damp deciduous forest, 4,500-5,000 ft. Dup., Bedaguli, fl. April-May. 2162, 2176. At the beginning of the monsoon rains a few lanceolate leaves up to about 1 in. long develop.

#### Aerides

1. **A. cylindricum**, Lindl. Very frequent on trees At.- Bellaji 4,000-5,000 ft., fl. May. 2110. Mid-lobe of lip yellow blotched purple, side lobes white streaked purple. Sweet-scented. Transplanted to Tambaram, where it flowered Jan.

2. **A. ringens**, Fisch. Frequent, E. sl. on trees at 4,500-5,000 ft., fl. July. 2198. Flowers white.

#### Vanda

**V. parviflora**, Lindl.? Dod. on trees, 4,000 ft., caps. May. 2146.

#### Saccolabium

1. **S. Jerdonianum**, Reichb. Evergreen forest below Honnametti on trees, fl. Sept., caps. June. 1894-6, 1966. Bracts not longer than pedicel and ovary, spur often as long as the lateral sepals.

2. **S. pulchellum**. Fisch. Frequent Moskal-Bedaguli on trees, fl. May-Sept. 1928. Transplanted and grown at Tambaram, fl. Dec. Sepals and petals green outside, inside pale green heavily mottled brownish-crimson lip white with a yellow centre, mentum whitish with pale reddish markings. Column reddish brown, ovary pale green.

**S. sp. nov.** East ridge at 5,500 ft. on trees in shola, fl. Sept., caps. Dec. 1889, 1890.

#### Diplocentrum

**D. recurvum**, Lindl. Very frequent throughout the area at 4,000-5,000 ft. on trees, fl. May and June, caps. Dec. 1933.



**Aneochochilus elatior**, Lindl. Frequent in sholas on the east ridge at 5,000 ft., fl. Dec. 2071. Sepals olive green on back, whitish within, becoming brownish near tip. Petals and lip pure white. Spur white-streaked green. Ovary olive green and brownish.

#### Zeuxine

**Z. longilabris**, Benth. Near Bedaguli in deciduous forest. Open flowers not seen.

#### Nervilia

1. **N. biflora**, Schltr. Near Cubbongundi in bare patches amongst tall grass in open deciduous forest 4,500 ft., fl. May. 2112. Scape and sheaths purplish-brown. Sepals and petals pale cinnamon. Lip almost white below, heavily veined with purple above, mid-lobe folded along a median line so as to form a keel on the upper surface. Sepals and petals fully expanded during the day, folded round the lip at night. Sweet-scented. The leaf appears a month or so after flowering. Upper surface of leaf yellowish-green mottled with bright green and brownish-red in the hollows to uniformly dull dark purple, under-surface purplish. Two reddish ovate cataphyls at the base of the very short stem. Tuber white.

2. **N. Aragoana**, Gaud. Frequent at 4,000-4,500 ft. in deciduous forest. Mal., Minchiguli, fl. April and May. Leaves June and later. 1932, 2113, 2115. Scape and bracts white to purplish. Sepals and petals greenish-yellow at base, side lobes whitish with dark purple veins, mid-lobe with longish white and purple hairs on upper surface. Ovary 6-keeled yellowish-green, keels purplish.

3. **N. monantha**, Blat. Frequent throughout the area from 4,000-5,700 ft. in open patches amongst tall grass in shola and moist deciduous forest, fl. May, caps. and leaves June and later. 1904-1905, 2114. Scape purple to brownish-green. Bracts pale. Sepals and petals pale green above, tinged with dull purplish-brown below. Lip whitish, fimbriations and hairs violet or purple. Cinnamon-scented.

#### Epipogum

**E. nufans**, Reichb. f. Dod., Mal., 4,500 ft., fl. May. 1898, 2142.

#### Habenaria

1. **H. barbata**, Wt. E.sl. 4,000 ft., Moskal 4,500 ft., fl. Sept. 2199.

2. **H. digitata**, Lindl. var. **foliosa**, Hook. f. Amongst grass on both ridges at 5,000-5,500 ft., fl. June-Sept. 1878, 1907. Leaves pale green beneath. Lateral sepals quite white, dorsal sepal green. Petals and lip white near middle becoming green at tips. Has an unpleasant sour smell.

3. **H.** sp. nov. At. in evergreen forest, fl. July-Sept. 2194. Leaves very pale below almost white-glaucous, upper surface yellowish-green, margins finely waved, tip curled back.

4. **H. rariflora**, A. Rich. Frequent on rocks at 5,000-5,500 ft. and descending on the eastern slopes to about 4,000 ft., fl. Sept. 1908-1909. Plants from lower altitudes are larger and have much more fleshy leaves than those from higher elevations.

5. **H. plantaginea**, Lindl. Pun. Gt. 4,000 ft., E.sl. in bamboo thickness, 3,500-4,000 ft., fl. Sept. 1896.

6. **H. longicalcarata**, A. Rich. Common in grassland at 4,500 ft. and above, fl. Sept.

7. **H. Heyneana**, Lindl. Common in marshy places in grassland at 5,000 ft. and upwards, fl. Sept. 1900-1901. The lateral petals and lip are quite white; lip and petals turn yellow before fading and whole flower dries blackish.

8. **H. affinis**, Wt. Locally common in tall grass in open forest, Moskal, Mal., fl. Sept. 1916-17, 1922-3. Dorsal sepal grass-green, rest of flower light yellowish-green. Flowers slightly fragrant.

9. *H. ovalifolia*, Wt. E.sl. in deciduous forest, 4,000 ft., Mal. 4,500 ft., fl. Sept. 2183.

10. *H. Perrottetiana*, A. Rich. Very frequent in grassland at 5,000 ft. and above, Dup., fl. Sept. 1899. Sepals green; petals and lip yellow, column whitish-green.

*Peristylus*

1. *P. spiralis*, A. Rich. Very frequent in wet places in grassland at 5,000 ft. and above, fl. Sept. 1910.

2. *P. aristatus*, Lindl. In evergreen forest at 5,000 ft. At., fl. Sept. 1893.

3. *P. Stocksii*, Krzl. Sholas At., fl. Sept. Whole flower green, spur paler. No scent noticed.

4. *P. goodyeroides*, Lindl. In deciduous forest at 4,000 ft., E. sl., Mal., fl. Sept. 1903. Sepals yellowish-green; petals and lip white; spur yellowish; ovary pinkish-brown. Cinnamon-scented.

*Plantathera*

*P. Susannæ*, Lindl. Frequent in tall grass. At., Dup., Mal., fl. Sept.

*Satyrium*

*S. nepalense*, Don. Pink-flowered form frequent in grassland at 5,000 ft. and above, fl. Sept.

*Disperis*

*D. neilgherrensis*, Wt. Very frequent in deciduous forest and tall grass at 4,000 ft. and above. Dod., Mal., E.sl., fl. May and June. 1879. Lateral sepals mauvish-pink; petals and dorsal sepal deep pink becoming brownish, veined purplish.

*Zingiberaceae*

*Globba bulbifera*, Roxb. Common in undergrowth in moist deciduous and evergreen forest, 4,000-4,500 ft., Mal., Bedaguli, Bel. E.sl., fl. Sept. 2200.

*Curcuma*

1. *C. neilgherrensis*, Wt. Very common in grassland above about 4,500 ft. fl. May. 1885.

2. *C. pseudomontana*, Grah. Evergreen forest, 4,000-4,500 ft., Bedaguli, fl. May. Only overed flowers seen.

*Hedychium coronarium*, Koen. In marshes at about 4,500 ft., Mal., Bedaguli, fl. June, caps. Sept. Most plants are white-flowered and have villous calyces, but the yellow-flowered form also occurs. 1886-7.

*Zingiber*

1. *Z. Zerumbet*, Sm. In deciduous forest at 4,500 ft., Minchiguli Valley, caps. Sept.

2. *Z. officinalis*, Roec. Deciduous forest, apparently wild. Dod. Flowers not seen.

3. *Z. Cassumunar*, Roxb. Frequent amongst tall grass at 4,500-5,000 ft., fl. June, caps. Sept. 1882.

*Costus speciosus*, Sm. Mal. in moist forest. Flowers not seen.

*Elettaria Cardamomum* Maton. Cultivated in evergreen forest and may also be wild.

*Musaceae*

*Musa superba*, Roxb. On rocky slopes near Bedaguli. Leaf with about 80 pairs of prominent veins, midrib channeled above, rounded and red below, oily.

*Haemodoraceae*

*Ophiopogon intermedius*, Don. Very common in sholas and evergreen forest, 4,500 ft. and above, fl. June-Sept. 1942.

*Iridaceae*

**Beiamcanda chinensis**, Lehm. (K) Devakeri, fl. Sept. A not very common plant from the Far East that has run wild.

*Amaryllidaceae*

**Hypoxis aurea**, Lour. Frequent on grassy slopes at 5,000 ft. and above, fl. and caps. May. 2201-2.

**Curculigo orchoides**, Gaertn. Common throughout the area, fl. June-Sept.

**Crinum latifolium**, Linn. Amongst rocks, E.sl. 4,500 ft., fl. April. 2141.

**Pancratium parvum**, Dalz. Common on grassy hilltops of the eastern ridge 5,000-6,000 ft. and extending down the Punjur Ghat to 3,500 ft., fl. April, caps. May. 1974, 2072, 2124-5.

This plant is leafless when in flower, the leaves appearing a little later and persisting during the moister months. Only one peduncle is produced by each bulb in a season, and there are 2-4 flowers to a peduncle. The flowers open in the late afternoon and wither next morning. This nocturnal flowering and the long slender corolla tube (up to 10 cms. long) suggest pollination by moths. Usually the flowers on the same plant open singly on successive days but sometimes two flowers on the same peduncle open together. The flowers are dimorphic; in some the style is short, the stigma being near the base of the staminal column; in others the style is long and extends up to 2 cms. above the mouth of the staminal column. Each plant has flowers of one form only. Plants at lower elevations have much longer and stouter peduncles than those on the hilltops.

*Dioscoreaceae**Dioscorea*

1. **D. bulbifera**, Linn. Common, Mal., Pun. Gt., 4,000-4,500 ft., fl. Sept. Female plants much more robust. Bulbils in axils large, leaf cordate, perianth lobes pinkish. In this genus the direction of twining is regarded as a constant character. This species normally twines to the left. At least one specimen collected by the writer was twining to the right.

2. **D. tomentosa**, Pun. Gt., 3,500 ft., E.sl. 4,000 ft., fl. June.

3. **D. pentaphylla**, Linn. E.sl. 4,000-4,500 ft., caps. Sept.

4. **D. oppositifolia**, Linn. Common, deciduous and evergreen forest, 4,000-5,000 ft. New leaves end of April.

*Liliaceae**Asparagus*

1. **A. racemosus**, Willd. Mal., E.sl., Bedaguli, fl. May.

2. **A. gonocladus**, Bakers. At., fl. May.

*Smilax*

1. **S. aspera**, Linn. Common, Mal., Pun. Gt., 4,000-4,500 ft., fl. June-Sept.

2. **S. prolifera**, Roxb. Near Moskal, fl. Dec.

**Gloriosa superba**, Linn. Common, Mal., Pun. Gt., 4,4,500 ft., fl. June-Sept.

**Dracæna ternstroflora**, Roxb. In evergreen forest at 4,000 ft. Dod., fl. and berries May.

**Lilium neelgherrense**, Wt. Growing in striking profusion amongst tall grass on the western slopes at 4,000-5,000 ft. Also in grassland on the eastern ridge at 5,000 ft. Fl. Sept., caps. shedding May.

*Chlorophytum*

1. **C. malabaricum**, Baker. Moist deciduous forest Pun. Gt. 3,500-4,000 ft. fl. May-Sept. Not typical. Leaves falcate, 1.5 ins. wide, glaucous. Anthers and filaments about equally long. Perianth lobes 5-nerved, .33 in. long.

2. *C. laxum*, R.Br. Common, grassy slopes and hilltops, 4,500-5,000 ft. fl. May. 1921.

*Scilla indica*, Baker. E.sl., Pun. Gt. 4,500 ft., fl. May.

*Ipbigenia indica*, Kunth. Frequent throughout the area 4,000-6,000 ft., fl. June.

#### Pontederiaceae

*Monochoria vaginalis*, Presl. var. *plantaginea*, Solms.-Laub. Devakeri, 5,000 ft., fl. June-Sept. 2143.

#### Commelinaceae

##### Commelina

1. *C. clavata*, Clarke. Very common along streams and in moist places in grassland at 5,000 ft. and above. Fl. May, Sept., Dec. 2134.

2. *C. attenuata*, Koen. 4,000-4,500 ft., fl. Sept.

3. *C. benghalensis*, Linn. E.sl. 4,500 ft. and below, fl. Sept.

4. *C. obliqua*, Ham.<sup>1</sup> In swamps in evergreen forest at 4,500 ft., fl. Dec. 1975, 2067. Leaves up to 6 cms. wide. Seeds oblong, surface smooth, black with grey crusty patches.

5. *C. undulata*, R.Br. var. *setosa* Clarke. E.sl., 4,000 ft. and below in rock crevices, fl. May.

6. *C. Kurzii*, Clarke. Very common amongst grass and in thickets at 4,000-5,000 ft., fl. May, Sept., Dec. Plants at lower levels semi-erect and about 2 ft. high.

7. *C. indehiscens*, Barnes. In swamps in evergreen forest, 4,000 ft., Minchi-guli Valley, Bedaguh, fl. and caps. June. Resembles *C. benghalensis* but produces cleistogamous flowers and underground capsules.

##### Ancilema

1. *A. dimorphum*, Dalz. Amongst grass 4,500-5,000 ft., and caps. Sept. 3 stamens with filaments bearded about the middle, anthers dark purple with line between the cells; 3 staminodes with cream-coloured 3-knobbed anthers and light purple practically unbearded filaments. 3 petals mauve, 3 sepals brownish purple.

2. *A. spiratum*, R.Br. Pun. Gt.

3. *A. sinicum*, Lindl. Common in grassland at 5,000 ft. Fl. May, Sept.

4. *A. giganteum*, R Br. Mal. amongst tall grass in moist deciduous forest at 4,500 ft., n. and caps. Sept. 1947-8.

5. *A. paniculatum*, Wall. Common amongst moss in hollows in rocks, usually on hilltops, 5,000-6,000 ft., fl. Sept. 1946. Plants not exceeding 5 cms. high. Sepals red, petals mauvish-blue. Filaments naked. Anthers dark red with black margins. Staminodes with white 3-knobbed heads. Pollen cream-coloured.

6. *A. montanum*, Wt. In swamps and along streams in evergreen forest at 4,500 ft., fl. May, June, Sept.

7. *A. ovalifolium*, Hook. f. Dod., fl. May.

##### Cyanotis

1. *C. cristata*, Schult. f. 4,000-5,500 ft., fl. Sept.

2. *C. tuberosa*, Schult. f. Very common amongst grass 4,500 ft. upwards, fl. April, Dec. 2205. At 4,500 ft. in tall grass it attains a height of about 3 ft.

3. *C. villosa*, Schult. f. Common in evergreen forests and shola 4,500 ft. upwards, fl. June, Sept.

4. *C. arachnoidea*, Clarke. Common between rocks and in grassland on hilltops 5,000-6,000 ft., fl. June, Sept. 1943. Leaves red, short and blunt at tip.

5. *C. fasciculata*, Schult. f. Between rocks at 5,000 ft., fl. Sept.

*Juncaceae*

*Juncus prismatocarpus*, R.Br. Devakeri, 5,000 ft., fl. May.

*Palmaceae*

*Phoenix humilis*, Royle, var. *pedunculata*, Becc. Common in grasslands up to 5,000 ft., fruiting May.

*Caryota urens*, Linn. In shola forest at 5,000 ft. At.

*Calamus Gambiei*, Dec. Frequent in evergreen forest 4,000-5,000 ft. Dod., fl. and fr. May and June-

*Pandanaceae*

*Pandanus tectorius*, Soland. In swamps at 4,000-4,500 ft., unripe fruit June. Flower not seen.

*Araceae*

*Lagenandra toxicaria*, Dalz. var. *Barnesii*, Fisch. In streams and marshes in evergreen and deciduous forest 4,500 ft., Mal., near Bedaguli, fl. June. 1950, 1968. Sheaths with 2 keels. Chamber and base of limb whitish, upper part of limb dull pale greenish, tip dark brownish-green, inside umb pinkish with purple processes, inside of chamber dark purple with darker lines. Stigmas white dusted brick red.

*Colocasia antiquorum*, Schott. In swamps, Dod., Mal., E.sl., fl. June. Leaf blades up to 24×14.5 ins. Spathe 12 ins. long.

*Remusatia vivipara*, Schott. Frequent throughout the area above 4,000 ft. on rocks, in forks of trees and in the ground. Fl. about March.

*Arisaema*

1. *A. tortuosum*, Schott. Frequent throughout the area above 4,000 ft.

2. *A. Leschenaultii*, Bl. Frequent in sholas on the western ridge and in the Doddasampage evergreen forest at 4,500 ft. and above; less frequent on the eastern ridge.

3. *A. barnesii*, Fisch. Same distribution as (2) and more common than it in the Doddasampagi Forest. 2139, 2140. The plants of this species growing round Bellaji have long, stipitate flat leaflets glossy below, long acuminate tips, numerous veins and a very clear intramarginal vein. Peduncle and petiole green with some dark purple mottling, cataphyns dark purplish green with some rather obscure scarlet mottling.

4. *A. peltatum*, Fisch. In sholas on the western ridge.

All the above plants flower in May and June and form ripe berries in Sept. and Oct.

*Amorphophallus mysorensis*, Fisch. and Bar. Bamboo forest, Pun. Gt. 3,500 ft., fl. April, berries ripen June. Peduncle 18 ins. long, mottled pale and olive green. Spathe purple, glossy. Lowest 1 in. of spadix with female flowers, ovaries spherical, yellowish green, stigma irregularly spherical a little smaller than ovaries, buff-yellow warty. One row of neuters consisting of rounded spongy bodies much larger than the ovaries. 2½ ins. of male flowers, anthers 4-celled opening longitudinally, corrugated and warty, tapering upwards.

*Raphidophora pertusa*, Schult. Climbing on large trees in evergreen forest, Moskal, fl. Oct.

*Lemnaceae*

*Lemna polyrrhiza*, Linn. Dod., in swamps.

*Eriocaulaceae**Eriocaulon*

1. *E. Thwaitesii*, Koen. At., fl. Sept.

2. *E. metaleucum*, Mart. At., fl. Sept.

3. *E. colinum*, Mart. ? Moskal, fl. June.